NSIDC Products in, and Experiments with, KML & RSS

Siri-Jodha S. Khalsa

National Snow and Ice Data Center

Virtual Globes

- Since 2006 NSIDC has maintained a “Virtual Globes” web page, serving a variety of its data products in KML
  - The virtual globes team is led by Lisa Ballagh
- Development efforts are coordinated between projects
- All KML files are subject to a "review" process before being published to our Virtual Globes site

Virtual Globes

- Some of our more popular products in KML are:
  - Sea ice animations (SSM/I, AMSR-E)
  - Glacier photo pairs (historical & recent)
  - Greenland surface melt (SMMR & SSM/I)
  - Breakup of Larsen B ice shelf (MODIS)
  - Permafrost extent (digitized maps)

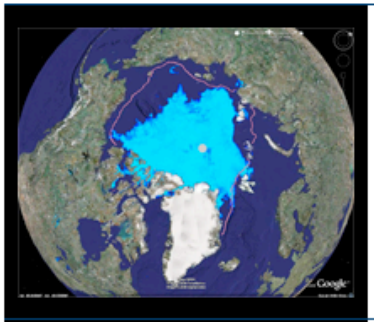
View NSIDC Data on Virtual Globes: Google Earth

The National Snow and Ice Data Center offers some of our data in the form of images. We have created Google Earth™ files that enable you to overlay the following data-based images on a virtual globe. Our goal is to help people better understand the cryosphere—where the world is frozen—by making our data more visible and interactive.

Featured Data highlights some of our most requested data, as well as our newest Google Earth files.
You can view more snow, ice, ice shelves, glaciers, permafrost, and sea ice on the globe.
Or, you can use Google Earth to locate cryospheric field data sets on the globe.

Note: each of our Google Earth files may reference multiple subjects and data sets. A particular file may be listed under more than one subject in the table that follows.

Featured Data



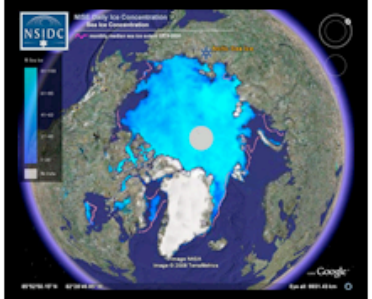
Arctic sea ice concentrations and extents, updated daily (AMSR-E sensor)

View the extent and concentration of Arctic sea ice for a recent period:

Past 30 Days (KML, 46 KB)
Past 60 Days (KML, 84 KB)
Past 90 Days (KML, 122 KB)

Data Source: AMSR-E/Aqua Daily L3 12.5 km Brightness Temperature, Sea Ice Concentration, & Snow Depth Polar Grids

Note: See Time Series in Google Earth to animate these images.



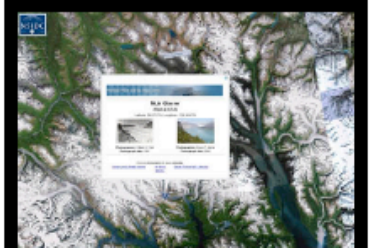
Arctic sea ice concentrations and extents, updated daily (SSM/I sensor)

View the extent and concentration of Arctic sea ice for a recent period:

Past 30 Days (KML, 46 KB)
Past 60 Days (KML, 84 KB)
Past 90 Days (KML, 122 KB)

Data Source: Near Real-Time SSM/I EASE-Grid Daily Global Ice Concentration and Snow Extent (NISE)

Note: See Time Series in Google Earth to animate these images.



Glaciers

View photographs of more than 4,000 glaciers, 1880s to present

Snow, ice, glaciers and permafrost file for Google Earth (KML, 8 KB)

Data Source: Glacier Photograph Collection; Near Real-Time SSM/I EASE-Grid Daily Global Ice Concentration and Snow Extent (NISE); Circum-Arctic Map of Permafrost and Ground-Ice Conditions

Note:.On October 1, 2007 we added more than 1,200 Greenland glaciers and several Franz Josef, New Zealand glaciers. Prior users may download the new file to get the updates

See Also

Movie of sea ice extents, 1979-2008, on Google Earth
2008 sea ice extent side-by-side with 1979-2008 climatology (QuickTime, 1.6 MB)

NSIDC Google Earth technical experiments

Atlas of the Cryosphere

Related Resources

NSIDC Virtual Globes Help and Documentation
More information on NSIDC Google Earth files.

Virtual Globes: Time Series in Google Earth
Tips on using the Time slider in Google Earth to animate files that contain time information.

Questions, comments or suggestions? Contact us at nsidc@nsidc.org or via the online contact form.

Accolades

- GE Blog stated:
  - NSIDC has some of the best scientific Google Earth content... to effectively show the condition of ice, glaciers, and snow around the world.
- An NSIDC sea ice product received recognition in PC World's "10 Amazing Google Earth Add-Ons"
- Sea ice analysis using NSIDC GE data was featured in July 2008 Popular Science
- In top 25 stories of Google Earth 2007

Technical Experiments

- NSIDC makes available experiment KML files
  - These illustrate capabilities we are interested in developing, as technology progresses
  - Each resulting file proves some capabilities, but also has limitations, as described
  - These technical notes may be of interest to other Google Earth file developers.

NSIDC Virtual Globes: Technical experiments

This page lists some of our experiments with using Google Earth to visualize our data. These files illustrate capabilities we are interested in developing, as technology progresses. Each resulting file proves some capabilities, but also has limitations, as discussed below. These technical notes may be of interest to other Google Earth file developers.

Since many of our data sets are time series, and global change is only apparent over time, we are experimenting with the time series capabilities of Google Earth. Google Earth v4, released on January 8, 2007, implements KML v2.1 to enable time series animations on the virtual globe. Time series animations are memory and bandwidth intensive, but users with a substantial amount of memory and good connectivity can install Google Earth 4.0.2722 or better to view some of the time series data sets below.

We have animated a variety of time series data to explore the usefulness of the technology. All use the Timeline widget that is new in Google Earth v4. If you are unfamiliar with the Google Earth Timeline widget, see Virtual Globes: Google Earth Timelines. Comments and feedback will be appreciated.

See also

QuickTime movie of sea ice extents, 1979-2006 on Google Earth (94 MB)

View NSIDC Data on Virtual Globes: Google Earth

Atlas of the Cryosphere

Related resources

NSIDC Virtual Globes Help and Documentation

Questions, comments or suggestions? Contact us at nsidc@nsidc.org or via the online contact form.

Files	Topic	Technical notes	Source data
Download Wilkins Ice Shelf imagery of the Spring 2008 break up event. (KMZ, 20 MB)	Ice Shelves	**Technical notes:** The Wilkins Ice Shelf imagery for this animation was derived from the MODIS Level 1B Calibrated Radiances product available at Goddard Space Flight Center. The true color images contained in this KMZ file are 250 meter resolution and were processed using the MODIS Swath-to-Grid Toolbox (MS2GT). The Wilkins break up event occurred over the period of a few days in early 2008 and, like the Larsen B break up in 2002, it is an example of how Antarctic ice shelves are becoming increasingly unstable. In an effort to closely monitor ice shelves and outlet glaciers the NSIDC processes and archives MODIS imagery daily of 20 areas along the Antarctic coast. The images in the ice shelf archive are available for download from the Antarctic Glaciological Data Center at NSIDC.	Antarctic Ice Shelf imagery
Download AMSR-E Daily Sea Ice Concentration for the past: 30 days **60 days** **90 days** (KML, 45 KB)	Sea Ice	**Technical notes:** The AMSR-E/Aqua Daily L3 12.5 km Tb, Sea Ice Conc., & Snow Depth Polar Grids (AE_SI12) product provides daily, global sea ice concentration for the polar regions. This animation of AE_SI12 shows the sea ice concentration and extent in the Arctic for the most recent 30/60/90 days. The monthly average sea ice extents, derived from the Sea Ice Index, are also shown to give an indication of how current conditions compare with average conditions. Network links are used to keep the imagery updated, so the most recent 30/60/90 days are always shown.	AE_SI12 Product
Download IABP buoy data for July 20 - August 18, 2008 (KMZ, 480 KB)	Buoy Data, Sea Ice	**Technical notes:** The International Arctic Buoy Program maintains a network of drifting buoys in the Arctic Ocean. For this demo we used daily data from a large number of buoys. We have not color coded the buoys as we did in the previous demo - but we have created some different labeling options to see what that might be like. We have also included sea ice concentration and extent as optional background layers. Eventually we'd like the buoy animation to be near real time and updated daily.	IABP Buoy data

ICESat

- GLAS Footprints and Waveforms
  - 40Hz laser shots w/ 70m footprints
  - Ability to relate features under footprint with waveform of return signal
- Issues surfaced
  - Machines freeze with too many points
  - Models (footprints) not clickable

242735482-19

242735482-18

242735482-17

242735482-

242735482

242735482-14

242735482-12

Pass: 242735482

Shot: 12
Date: 10/08/2003
Time: 22:39:08.653
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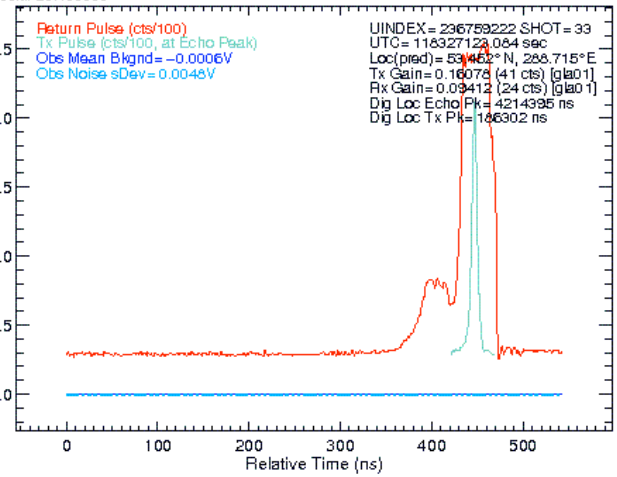
Elevation: 345.084
Geoid: 29.405385



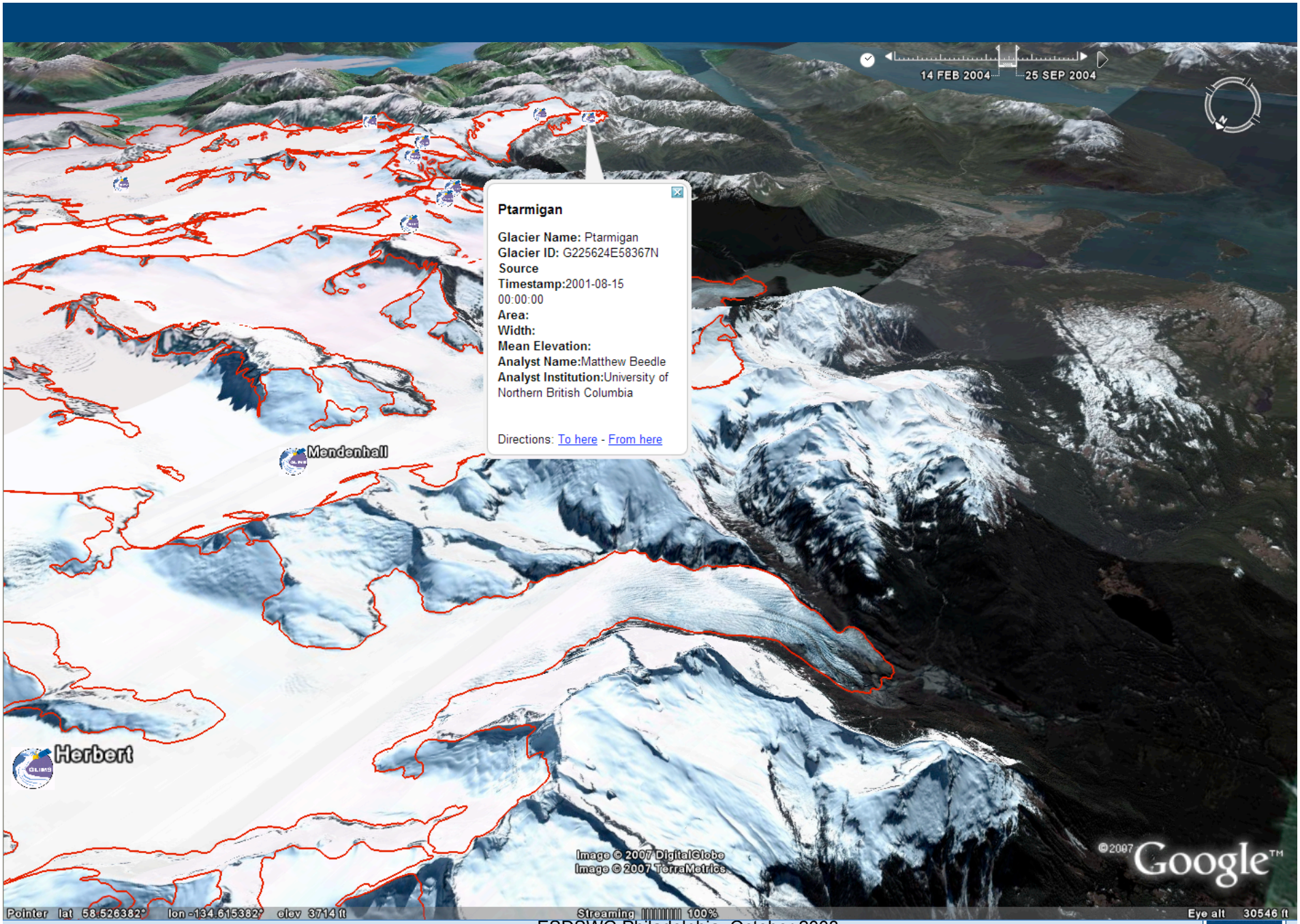
Directions: To here - From here

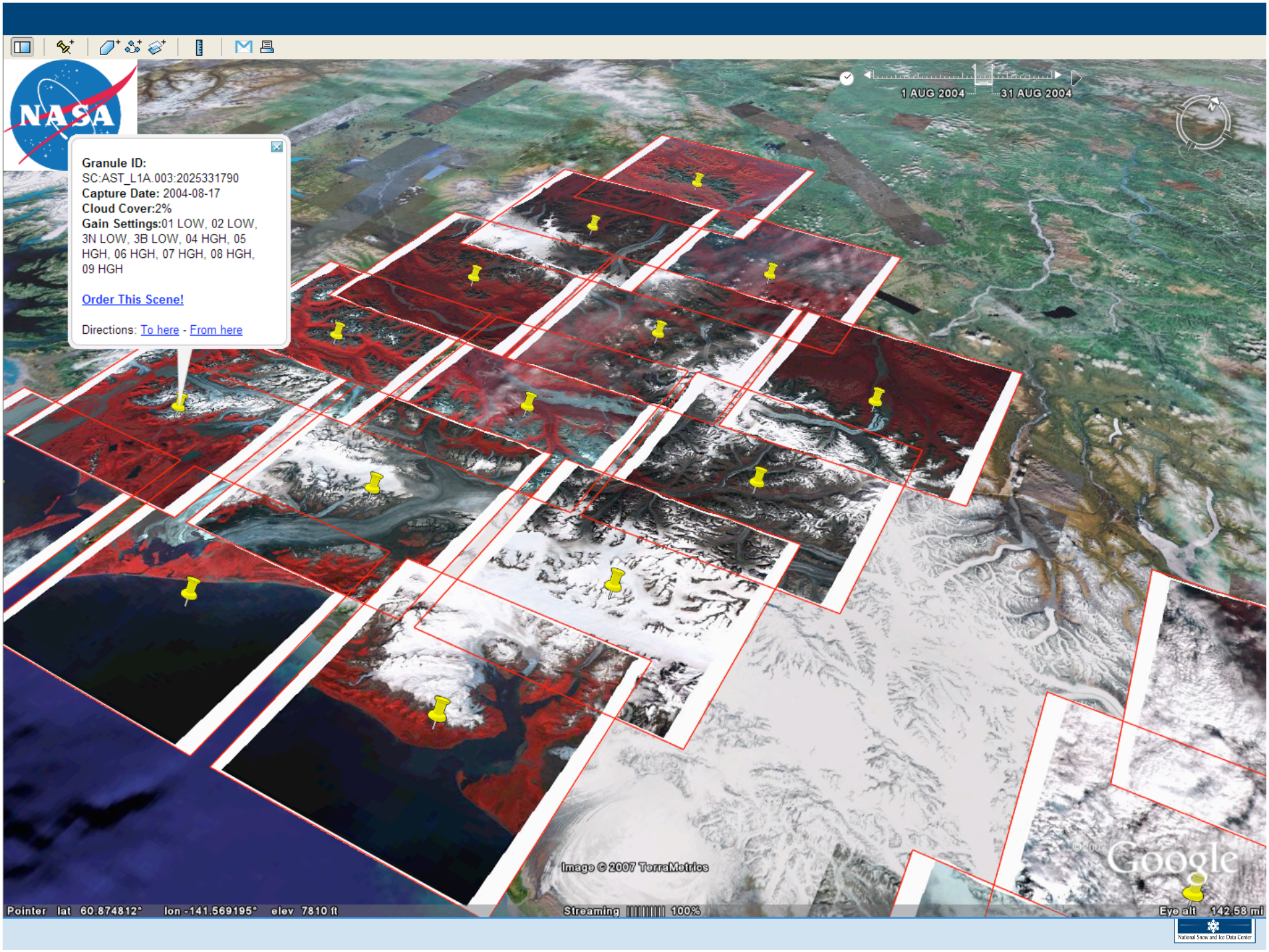
Image © 2008 TerraMetrics

69°15'15.49" N 49°51'39.84" W elev 1825 ft Eye alt 12743 ft

Glacier Monitoring

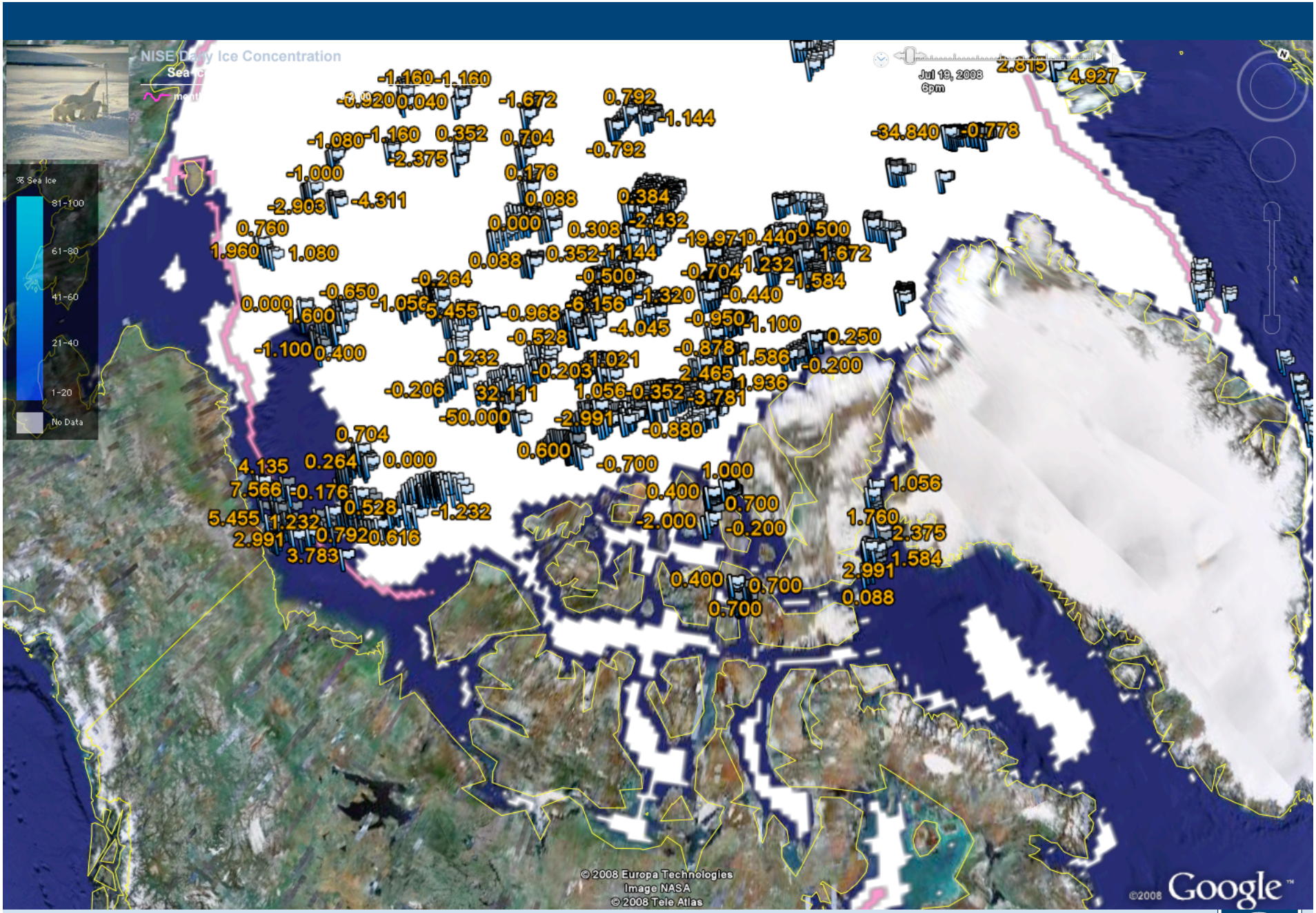
- Glacier outlines
  - Quality checks
  - User Browse
- ASTER Imagery Browse
  - Time slider valuable

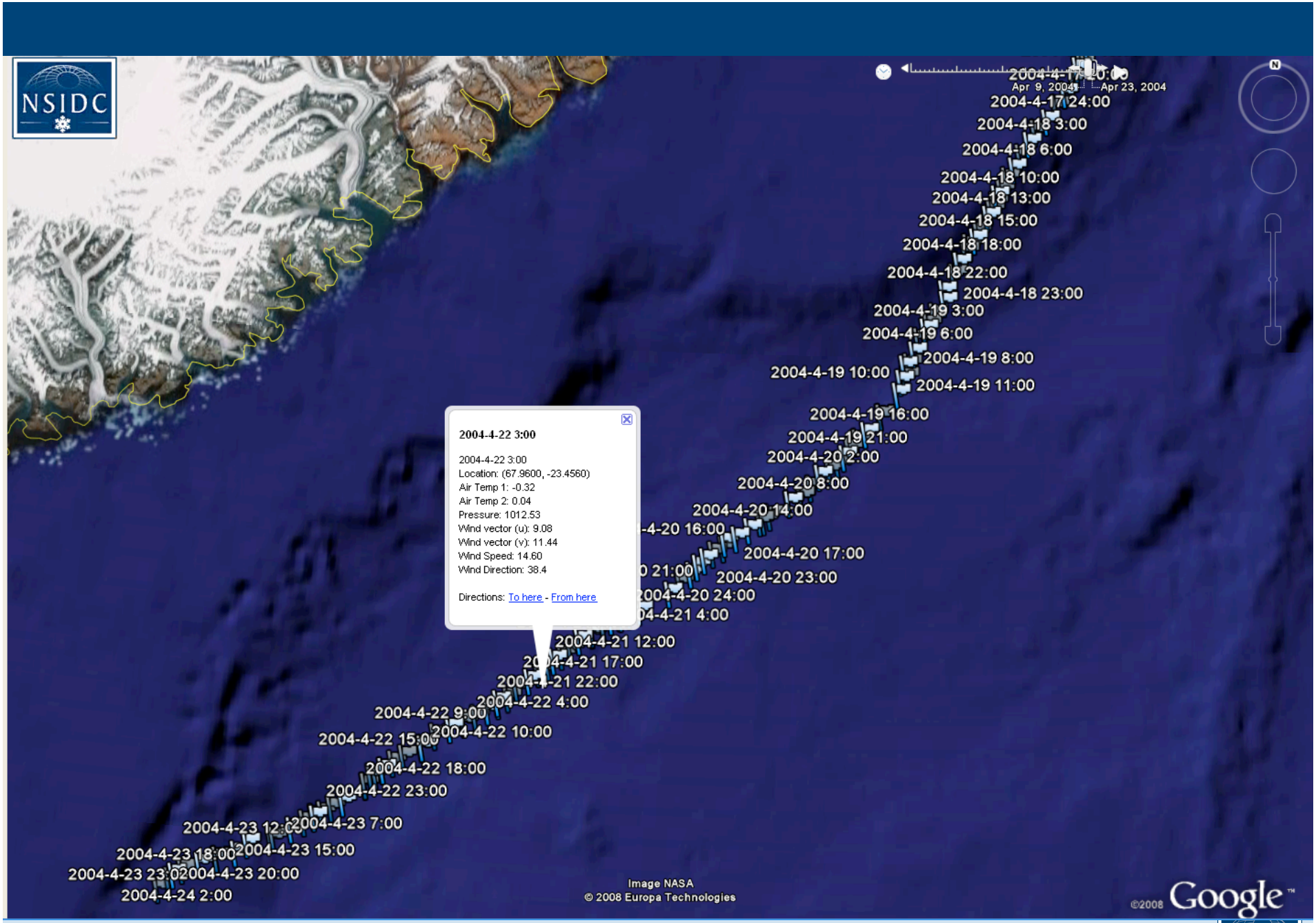

14 FEB 2004
25 SEP 2004
Ptarmigan
Glacier Name: Ptarmigan
Glacier ID: G225624E58367N
Source
Timestamp:2001-08-15 00:00:00
Area:
Width:
Mean Elevation:
Analyst Name:Matthew Beedle
Analyst Institution:University of Northern British Columbia
Directions: To here - From here
Mendenhall
Herbert
Image © 2007 DigitalGlobe
Image © 2007 TerraMetrics
© 2007 Google™
Pointer lat 58.526382° lon -134.615382° elev 3714 ft
Streaming 100%
Eye alt 30546 ft


1 AUG 2004
31 AUG 2004
Granule ID:
SC:AST_L1A.003:2025331790
Capture Date: 2004-08-17
Cloud Cover:2%
Gain Settings:01 LOW, 02 LOW, 3N LOW, 3B LOW, 04 HGH, 05 HGH, 06 HGH, 07 HGH, 08 HGH, 09 HGH
Order This Scene!
Directions: To here - From here
Image © 2007 TerraMetrics
Google
Pointer lat 60.874812° lon -141.569195° elev 7810 ft
Streaming 100%
Eye alt 142.58 mi
National Snow and Ice Data Center

Drifting Buoy Data

- The International Arctic Buoy Program (IABP) Data
  - Would like to display NRT data
- North Pole Environmental Observatory (NPEO) Weather and Radiation Buoy Data, 2002-2004


NISE Daily Ice Concentration
% Sea Ice
81-100
61-80
41-60
21-40
1-20
No Data
Jul 19, 2008
6pm
© 2008 Europa Technologies
Image NASA
© 2008 Tele Atlas
©2008 Google


NSIDC
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Apr 23, 2004
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2004-4-18 3:00
2004-4-18 6:00
2004-4-18 10:00
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2004-4-18 15:00
2004-4-18 18:00
2004-4-18 22:00
2004-4-18 23:00
2004-4-19 3:00
2004-4-19 6:00
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2004-4-23 15:00
2004-4-23 18:00
2004-4-23 20:00
2004-4-23 23:00
2004-4-24 2:00
2004-4-22 3:00
2004-4-22 3:00
Location: (67.9600, -23.4560)
Air Temp 1: -0.32
Air Temp 2: 0.04
Pressure: 1012.53
Wind vector (u): 9.08
Wind vector (v): 11.44
Wind Speed: 14.60
Wind Direction: 38.4
Directions: To here - From here
Image NASA
© 2008 Europa Technologies
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NSIDC & GeoRSS

- NSIDC is a rich source of cryospheric information and provides a number of syndicated newsfeeds
- Two of these use the GeoRSS standard
  - NOAA at NSIDC
  - Updates to the Atlas of the Cryosphere
- Looking at ways to automate

RSS at NSIDC: Get data news, product updates, and more

RSS Overview

RSS, which stands for Really Simple Syndication, is an easy way to keep up with many different sources of information. RSS feeds from NSIDC provide headlines on NSIDC news, data set releases, product updates, events, and other developments from NSIDC. When you subscribe to an NSIDC RSS feed, you can keep up with the latest developments at NSIDC without having to visit the Web site every day. Links to our site from NSIDC RSS feeds will help you quickly get to content that interests you.

About NSIDC RSS feeds

At present, NSIDC offers two GeoRSS feeds, one with headlines from NOAA at NSIDC and one for updates to our Atlas of the Cryosphere map server. If interest warrants, we may expand our GeoRSS feeds to include more headlines from NSIDC, or offer additional feeds on specific topics. Your feedback is welcome; please contact us with your comments.

What is GeoRSS?

GeoRSS provides you with geolocation information related to headline items. GeoRSS, which stands for Geographically Encoded Objects for RSS Feeds, is an extension of RSS. GeoRSS feeds include geolocation tags, allowing you see the location that is related to an RSS feed item, on an interactive map. For example, if we publish a new data set in the Arctic, and you are using an application that can use the GeoRSS information, you will see an interactive map locating the new data.

How to get NSIDC RSS feeds

NSIDC RSS feeds works as either a simple RSS feed, or as a GeoRSS feed. You may do any, or all, of the following:

1. Download an RSS reader, a simple and usually free application that lets you subscribe to feeds from different Web sites, and automatically checks those sites for new headlines. Using an RSS reader, you can subscribe to feeds from a number of sites and easily review all new headlines from a single page.
2. Subscribe to an online RSS reader service, which does not require you to download software.
3. Visit the GeoRSS Web site for links to interactive map interfaces that support GeoRSS information in RSS feeds.
   Note: GeoRSS is an emerging technology, and capabilities vary by map interface.

How do I find an RSS reader?

To find an RSS reader, you can type "RSS reader" in your favorite Web search tool.

How do I subscribe to an NSIDC RSS feed in my RSS reader, or use it in a GeoRSS-enabled application?

To subscribe to our RSS feed, copy the URL for the RSS feed you would like to receive into the RSS reader of your choice. A list of RSS feeds available is at right, indicated by the RSS icon. RSS Click on the icon for the feed you are interested in, to see the "raw" feed and the URL for this feed.

For more assistance, contact the provider of the RSS reader.

Procedures vary for use with GeoRSS-enabled applications. Please refer to the documentation for the application of your choice. More information is available on the GeoRSS Web site.

RSS NSIDC 2008 Arctic sea ice melt season

RSS News from NOAA at NSIDC

RSS Atlas of the Cryosphere updates

RSS NSIDC Data News

See Also

NSDIC Press Room
News from NSIDC.

NSIDC Data News
New data products, product updates, and other data announcements.

NSIDC Events
Workshops, meetings, symposia, lectures, and more.

Conclusions

- Providing data in GE is popular as well as scientifically valuable
- Improvements sought
  - Better memory management for large data sets
  - Fix seam at the dateline (some platforms)
  - Support overlays in polar projections
  - Better time slider control
  - “Lookat” - allow inheritance or ability to set for entire file
- Geospatial searches in Google

Thank You!